DOCUMENT RESUME

ED 268 800 FL 015 616

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TITLE Naturalistic Contingencies in Mothers' Interactions with Normal and Retarded Children.
PUB DATE 25 Aug 85
NOTE 22p.; Version of a paper presented at the Annual Meeting of the American Psychological Association (Los Angeles, CA, August 25, 1985).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Child Language; Interpersonal Communication; *Language Acquisition; Language Research; *Language Styles; *Language Usage; *Mental Retardation; *Mothers; *Parent Child Relationship; Questioning Techniques

ABSTRACT

A study of mother-child interaction focused on the contingent responses children make to various mother strategies to elicit language and the mothers' frequency of using that tactic. The subjects were six normal and four retarded children, matched for general language skills, and their mothers. Mother-child interactions videotaped at home were coded for the potential teaching functions of the mother utterances and the pragmatic functions of the child behaviors. It was found that the mothers of retarded and normal children were similar in terms of general language usage and number of utterances but that the tactics the mothers used to elicit verbal behavior were different. Both groups used all four defined tactics, but mothers of retarded children relied significantly more on modeling, and mothers of normal children showed a more balanced use of strategies. Analysis of child responsiveness showed that normal children were generally more responsive, but not significantly. The correctness of child responses was analyzed as well as the relationship between frequency of mother use of a tactic and frequency of spontaneous speech. Further research on the differential interaction between mothers of normal and handicapped children is recommended. Several tables and graphs are included. (MSE)

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Naturalistic Contingencies in Mothers' Interactions with Normal and Retarded Children

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A version of this paper was presented at the annual meeting of the American Psychological Association, August 25, 1985 in Los Angeles, California. Research reported in this paper was supported by a grant from the Office of Special Education to the first author while at the University of Kansas. The contributions of Cathy Alpert, John Anderson, Connie Dennis, Steve Warren and the student hourly workers who transcribed these data are gratefully acknowledged.

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Although there is evidence that parents do adjust the complexity, prosody, and content of their input to their language learning children (Snow, 1977; Hoff-Ginsberg & Schatz, 1982), very little is known about the interactional mechanisms responsible for those adjustments. In general, it has been assumed that parents adjust their input on the basis of complexity of the child's productive language ( ). There are correlational data illustrating a correspondence between parent complexity and child MLU ( ). Few studies have examined the specific tactics that parents use to in interacting with their children (c.f. Schacter, 1979; Moerk 1976, 1983; Shatz , 1979). Studies, such as Schatz (1979) study of mother question asking, have again reported changes in parental strategy to be correlated with the child's productive linguistic development as measured by changes in MLU.

The present study approached the analysis of mother-child interaction from the perspective of the contingencies children provide for their mothers. Contingent responses are assumed to serve a dual function. They may provide information about the child's linguistic knowledge or, potentially, provide reinforcement for their mothers efforts. By examining the responses children make to various mother strategies to elicit language and concurrently examining their mothers' frequency of using that tactic, it may be possible to determine if there is a

relationship between child responsiveness and mother behavior.

The interactions of mothers with normal and retarded children matched for MLU provide an opportunity to examine contingencies children provide in interactions somewhat separately from their linguistic characteristics. Children were selected so that their general language skills were quite similar, (that is, they were matched in terms of their MLU). It was assumed that any differences in mother strategy must then arise not from the general complexity of their children's productive language, but from more specific characteristics of the interactions with their children. It was also tenatively assumed based on previous research reporting that retarded children are less responsive than normal children, and that the two groups of children might provide somewhat contrastive contingencies for their mothers. If this was the case and if contingent child responses play a role in shaping mother behavior, there should be systematic differences in the interactional strategies of the two groups of mothers.

Content and contingency are not independent. A positively contingent response to a mother question is one in which the correct because of content is appropriately matched to the question. Thus, each content response contains linguistic information which mothers may use in choosing subsequent strategies for eliciting responses. This places some constraints

on the extent to which contingencies *per se* can be posited to be entirely explanatory for differences in mother linguistic input.

The purpose of the present study was to examine the extent to which mothers' choice of strategies for eliciting verbalizations were related to their children's responses to specific strategies.

METHOD

Subjects. Subjects were four moderately retarded children and their mothers and six normally developing children and their mothers. Children were classified as normally developing or retarded on the basis of (1) comprehensive behavioral assessments administered through another project, and (2) Bayley scores at the beginning of the current study. All subjects were caucasion, first or second born, and lower or lower middle SES. Subjects were part of a group of 20 mother-child dyads who participated in an 18 month longitudinal study. Subjects were selected for the current study if the children had an MLU of 1.01-1.25 during two sessions in which they had produced at least 50 intelligible utterances. Subject characteristics are shown in Table 1.

Insert Table 1 about here

Procedures. Mother-child interactions were videotaped in the

families' homes. Each observation lasted 20 minutes. Verbatim transcriptions were prepared and mother and child behaviors were coded while viewing the tape and referring to the transcriptions. Reliability was calculated separately for mother and child behaviors based on a total of 8 reliability observations. Average reliability for mother behavior was 86%; for child behavior 81%. Reliability was also calculated for the verbatim transcriptions. Average reliability for mother transcripts was 98% and for child transcripts was 89%.

Coding Categories. Each mother utterance was coded according to its potential teaching function. Child behaviors were coded according to their pragmatic functions. An overview of the coding categories is shown in Table 2. For the present

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Insert Table 2 about here

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study, the four sub-components of the category "Mother Elicits Verbalizations" were examined. Mother behaviors are defined in Table 3. Child responses to these categories were examined in terms of their content and correctness. Linguistic data (Mother and child MLU, child upperbound, vocabulary size) were derived from the verbatim transcripts.

Insert Table 3 about here

RESULTS

The mothers of retarded and normally developing children were remarkably similar in terms of MLU and number of utterances per sample. Although the children were matched on MLU, the upperbound of the retarded chidlren was signficantly lower (2.37) than that found for the normally developing children (3.25) ($t_8 = 3.723$, $p < 0.01$).

However, the tactics mothers used to elicit verbal behavior from their children differentiated the groups. Mothers of both groups employed all of the defined tactics to elicit verbalizations (SFM, SF, IOQ and CE). The results shown in Figure 1 indicated mothers of retarded children relied significantly more than mothers of normally developing children on modeling (SFM) to elicit verbalizations from their children ($t_8 = 2.47$, $p < 0.05$). Mothers of normally developing children demonstrated a more balanced use of the four eliciting tactics. Simple questions (SF) were the tactic of choice for these mothers ($t_8 = 2.4$, $p < 0.05$). The use of more complex questions (IOQ and CE) was

low for both groups, but mothers of normal children used them more frequently than mothers of retarded children.

Insert Figure 1 about here

Analyses of general child responsiveness to eliciting tactics showed that normal children were generally more responsive than retarded children, but the differences were not significant. response. Retarded children were about equally responsive to simple questions and modelling. About 60% of the time each of these tactics were used, the retarded children made some response. Given differences in normal and retarded children's mothers choices of tactics, child responses to modeling and label questions were of particular interest. Examination of the correctness of child responses to the primary eliciting strategies indicated that retarded children responded correctly to 25% of the simple questions and 40% of the models (See Figure 3). A reverse pattern was seen with normal children who responded correctly to 52% of their mothers' questions and only 26% of the models. Correlations between frequency of mother use of a specific elicitation tactic and percentage correct child response was significant for both simple question asking and for modeling.

Insert Figure 3 about here

In order to determine if mother choice of tactics might be related to other characteristics that differentiated the two groups in addition to child responsiveness, separate correlations between frequency of mother use of a tactic and frequency of spontaneous speech, upperbound, and novel vocabulary in the first 50 utterances were calculated. Mothers' use of SFM modeling was negatively correlated with increasing spontaneous speech ($r = -.675$, $p>0.002$). Retarded children as a group had significantly fewer spontaneous utterances and their mothers used SFM more frequently than the mothers of the normal children. Mothers use of simple questions (SF) was positively correlated with size of child spontaneous vocabulary ($r = 0.47$, $p<0.05$). The spontaneous vocabulary observed in the first 50 utterances was greater for normal children than for retarded children a mean of (14.25 vs. 8.625 words per 50 utterance sample) and mothers of normal children used simple questions significantly more often.

To determine the relative contributions of each these aspects of child behavior, to mother choice of tactic, a stepwise multiple regression analysis was performed. Given the constraints of the current data these procedures yield results which should be considered as exploratory.

In the case of both SFM and SF, child correct response

contributed the most to the variance in mother use of those tactics. The combination of child correct response and child spontaneous vocabulary accounted for a greater proportion of the variance for SF than SFM. A summary of these results are shown in Table 4.

Insert Table 4 about here

DISCUSSION

These results suggest that one possible source of information available to mothers in fitting their language to their child's developing language is the natural contingencies provided by childrens responses to attempts elicit language in this case. The children's correct responses provide specific contingencies for two mother tactics, modeling and simple question asking. Mothers altered their behavior consistent with their child's repsponsiveness for these two strategies. Children's responses to modeling and question asking seems to fit into an overall larger pattern of the child's spontaneous speech use. As vocabulary size and rate of intelligble spontaneous utterances increase, mothers of normal children decrease their use of the tactic which provides children with names of things or correct pronounciation of names, i.e., modeling. In the case of normal children, failure to respond to mother models did not seem to be

an inability to respond, but more a case of the child finding the modeling inappropriate and indicating that to the mother. When mothers presented models in a manner suggesting the child had an option to imitate them, such as "can you say "ball"?, their normal children sometimes replied "NO". (This finding is consistent with Shatz, 1979.) Other times these simply ignored the model and continued the conversation. (A systematic analysis of exactly which models children imitated is needed.) On the other hand, retarded children´s failure to respond correctly to questions appeared to be a lack of knowledge of what mother was requiring. The nature of incorrect responses may also provides information to the mother regarding her child´s langauge abilities.

Mothers apparently have multiple sources of information as a basis for adjusting both their linguistic complexity and tactics for interaction. The content of child responses are prominent among the sources. The child´s specific responses to mother questions and models inform the mother about the child´s conceptual or content knowledge and about the success of a particular tactic in eliciting that type information from the child. The child´s broader set of linguistic behavior (i.e., size of vocabulary and rate of spontaneous intelligible utterances) are also factors mothers consider in choosing a language eliciting tactic. Choice of tactic for eliciting essentially the same content (i. e., labels) seems to be quite

important to structuring both input and practice opportunities for the child. If the tactic fails, is too simple or too complex, the information may be ignored and an opportunity to learn or practice is lost.

The current study analyzed child responses in the framework of the contingencies children provide for mothers choice of language eliciting tactic. Although eliciting tactics are a small subset of mothers overall linguistic interaction with their language learning children, the resuls suggest how this aspect mother behavior may be shaped by child responses. The process of shpaing may be especially important to our understanding of how mothers of handicapped children come to exhibit different patterns of interaction with their children from those of mothers with normal children. Content of child responses and relatively subtle aspects of the childs language repertoire (vocabulary size, frequency of spontaneous speech) may lead the mother so fmentally retarded children to choosing the more directive and supportive teaching strategies reported in previous studies. Future efforts should be in the direction of a still comprehensive analyses of the child performance factors affecting mothers' behavior in conversations.

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Table I

Subject Charcteristics

A			CHILD AGE		CHILD MLU		UPPERBOUND		Child Utterances averaged across two samples	Intelligable Utterances	Mother MLU		Mother Utterances averaged across two samples
	Retarded	Sex	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2			Sample 1	Sample 2	
S#	5	F	2.11	3.1	1.05	1.05	2	2	116.5	64	2.72	2.23	189.5
	19	F	2.8	2.5	1.04	1.11	3	3	119.5	51.5	2.68	2.83	347.5
	6	F	3.3	3.4	1.01	1.01	2	2	219	90.5	3.04	3.10	419.5
	2	M	2.9	3.2	1.10	1.12	2	3	147	87.5	2.83	2.80	367
Mean			2.11				2.37		150.5	73.4			330.9
B	Normal												
S#	10	F	2.0	2.3	1.22	1.07	3	3	205	77	2.69	2.66	372
	4	M	2.1	2.5	1.06	1.18	4	3	188.5	90.5	2.91	2.84	231
	1	M	1.10	1.11	1.05	1.18	3	4	278	173.5	3.36	2.98	299
	14	F	1.9	1.11	1.02	1.09	2	4	226.5	132	3.41	3.65	414
	15	F	2.3	2.4	1.08	1.14	2	5	124	78	3.58	3.89	243
	8	M	1.8	1.11	1.17	1.1	3	3	205	95.5	3.2	2.76	402
Mean			2.0				3.25		204.5	107.7			326.8

Table II

Summary of Mother-Child Code Categories

MOTHER BEHAVIORS

Elicits verbal behavior

SF	Elicits a specific form
SFM	Elicits a specific form with model
IO-Q	Information/opinion seeking - question
CE	Elicits a clarification or elaboration

Elicits acknowledgement

RTY	Receptive testing - yes/no
IQ-Y	Information/opnion seeking
ENQ	Encoding as question
RQ	Response question
AIQ	Adds information as question

Elicits Nonverbal Behavior

I	Instruction
RTNV	Receptive testing - nonverbal

Feedback for verbal behaviors

PFV	Positive feedback (praise) for verbalization
CFV	Corrective feedback for verbalization
AV+	Acknowledgement of verbalization - positively-stated
AV-	Acknowledgement of verbalization - negatively-stated

Feedback for nonverbal behaviors

PFNV	Postive feedback (praise) for nonverbal behavior
ANV+	Acknowledgement of nonverbal behavior - positively-stated
ANV-	Acknowledgement of nonverbal behavior - negatively-stated

Comments

EN	Encoding
AI	Adds information

Answers

AY	Answers with yes or no
AEN	Answers by encoding
AAI	Answers with additional information

Other

VOC	Vocative
RDG	Reading
OTH	Other
XXX	Unintelligible

CHILD BEHAVIORS

Nonverbal Behaviors

C	Compliance
NC	Noncompliance
OC	Compliance unknown

Vocalizations

VO	Vocal Behavior unintelligible

Verbal Behavior

ANS	Answer
NVA	Nonverbal answer
CT	Comment
Q	Question
QCL	Clarification question
RC	Request/command
VOC	Vocative
AV	Acknowledges verbalization
ANV	Acknowledges nonverbal behavior
PRO	Protest
OTH	Other

TABLE 3

Definition of Coding for

Mother Elicits Verbal Behavior

Code	Behavior	Definition
SFM	Specific Form with a model	Mother seeks a specific answer from the child, and provides a model. Example: Say "ball". Can you say "ball"
SF	Specific Form	Mother elicits a specific form by asking a simple question without supplying a model. Example: "Tell me what this is." "What is this?"
IOQ	Information or opinion seeking question	Mother requests information from the child that is unknown to her. Example: "What do you want that for?" "What would you like for lunch?"
CE	Elicits a clarification or elaboration	Mother seeks clarification or elaboration of a child utterance. Example: "You want a what?" "What did you say?"

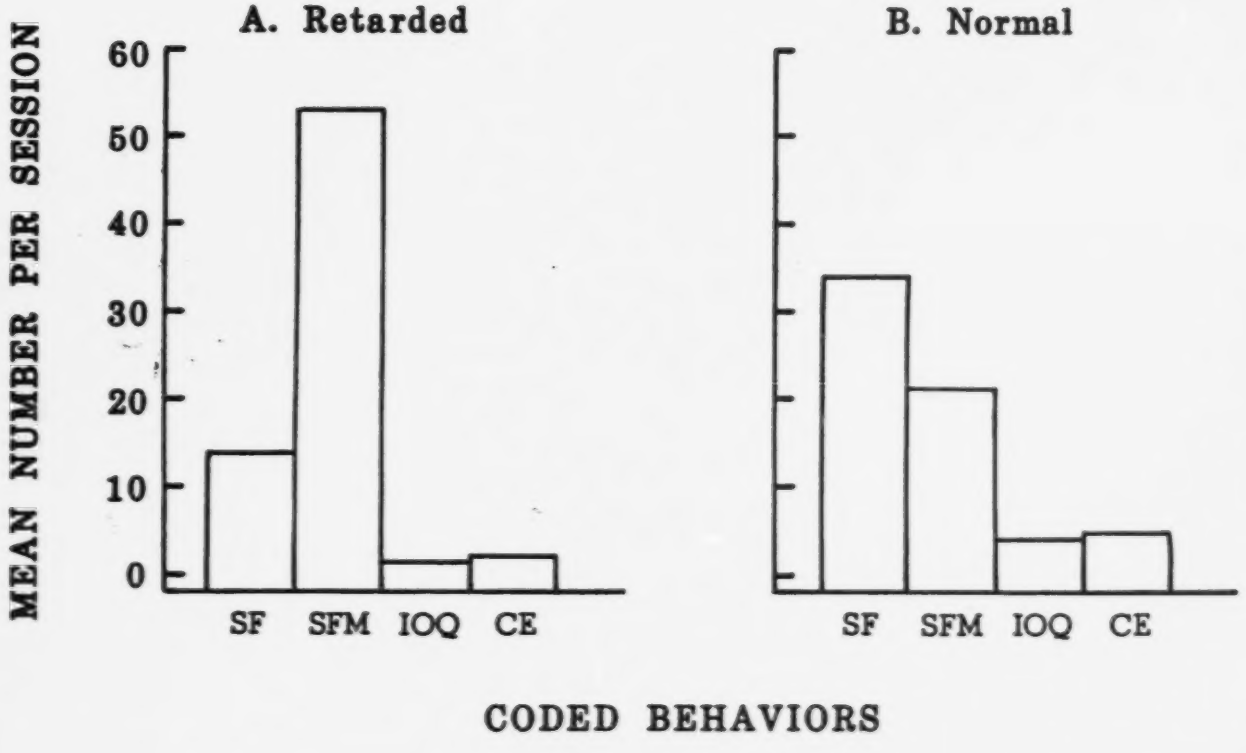
Table 4

Multiple Regression Summary Table

	R^2	R^2 Change
MOTHER USE OF SF		
One Variable		
SF = Child Correct Response	.862403	
Two Variables		
SF = Child Correct Response & Child Spontaneous Vocabulary	.925455	.0631
Three Variables		
SF = Child Correct Response and Child Spontaneous Vocabulary and Child Spontaneous Rate	.926153	.0638
MOTHER USE OF SFM		
One Variable		
SFM = Child Correct Response	.693465	
Two Variables		
SFM = Child Correct Response & Child Spontaneous Vocabulary	.74115	.0477
Three Variables		
SFM = Child correct response and Child Spontaneous Vocabulary and Child Rate of Spontaneous Speech (1st 50 utterances)	.747862	.0544

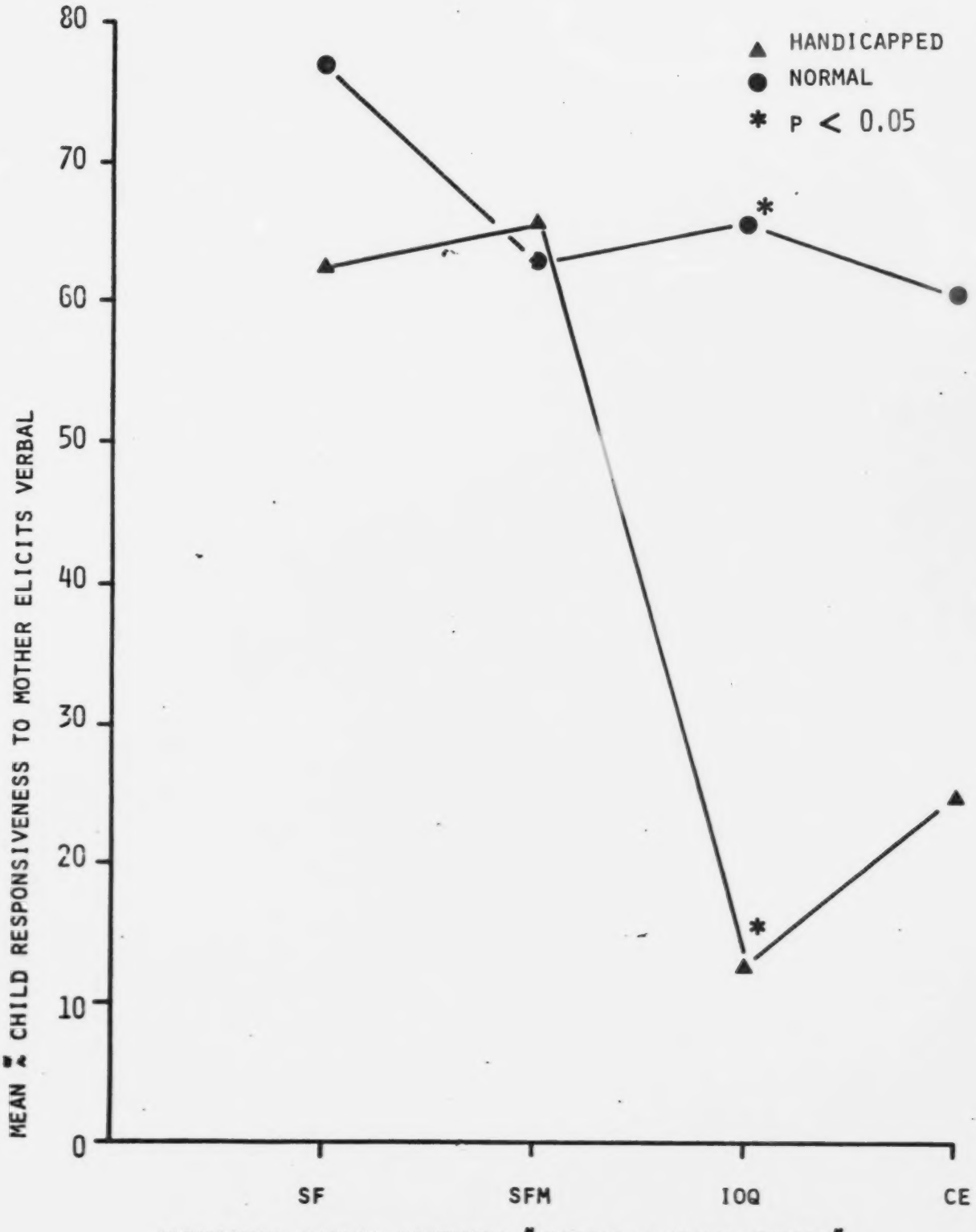
Mother Use of Functions Within Category Elicits Verbal

SF - Elicits a specific form
SFM- Elicits a specific form with model
IOQ- Information/opinion seeking question
CE - Elicits a clarification or elaboration



CHILD RESPONSIVENESS TO

FUNCTIONS WITHIN CATEGORY "MOTHER ELICITS VERBAL"



Mean % Child Correct Responses to Mother Attempts to Elicit a Specific Form